Claims

1. A method of forming a wound dressing, which method comprises forming a protein polymer by reacting a protein with a polyfunctional spacer, or an activated derivative thereof.

2. A method as claimed in Claim 1, wherein the protein polymer is formed *in situ*.

3. A method as claimed in Claim 1, wherein the protein polymer is formed prior to application.

4. A method as claimed in Claim 3, wherein a supporting substrate is incorporated into the dressing.

5. A method as claimed in Claim 3 or 4, wherein the dressing is in the form of a bandage or gel sheet.

6. A method as claimed in any preceding claim, further comprising the application to the wound dressing of a vapour-permeable membrane.

7. A method as claimed in any preceding claim, wherein the protein is a globular protein.

8. A method as claimed in any one of Claims 1 to 6, wherein the protein is a fibrous protein.

9. A method as claimed in Claim 7, wherein the globular protein is a serum protein.

10. A method as claimed in Claim 9, wherein the protein is albumin.

11. A method as claimed in Claim 10, wherein the albumin is human serum albumin.

12. A method as claimed in Claim 1, wherein the protein is blood-derived.

13. A method as claimed in Claim 1, wherein the protein is a recombinant product.

14. A method as claimed in any preceding claim, wherein the spacer is selected from the group consisting of polycarboxylic acids, polyamines, poly(carboxy/amino) compounds, polyalcohols, polyketones, polyaldehydes and polyesters.

15. A method or wound dressing as claimed in Claim 14, wherein the spacer is a polycarboxylic acid.

16. A method as claimed in Claim 15, wherein the polycarboxylic acid is a dicarboxylic acid.

17. A method as claimed in Claim 16, wherein the dicarboxylic acid is an alkylene dicarboxylic acid.

18. A method as claimed in any preceding claim, wherein the spacer is activated to facilitate reaction with the protein molecules.

19. A method as claimed in Claim 18, wherein the activating agent is a carbodiimide compound.

20. A method as claimed in Claim 19, wherein the carbodiimide compound is ethyl[dimethyleminopropyl]-carbodiimide.

21. A wound dressing prepared by the method of any preceding claim.

22. A wound dressing comprising a protein polymer formed by reacting a protein with a polyfunctional spacer, or an activated derivative thereof.

23. A wound dressing as claimed in Claim 22, which is formed *in situ*, by reaction of the protein and polyfunctional spacer, or activated derivative thereof, at the wound site.

24. A wound dressing as claimed in Claim 22, which is preformed, prior to application of the dressing to the wound site.

25. A wound dressing as claimed in Claim 24, which comprises a bandage impregnated with the protein polymer.

26. A wound dressing as claimed in Claim 24, which is in the form of a gel sheet.

27. A wound dressing as claimed in Claim 25, in which the gel sheet has a supporting substrate.

28. A wound dressing as claimed in any one of Claims 21 to 27, which further comprises one or more therapeutically active agents.

29. A wound dressing as claimed in Claim 28, wherein the therapeutically active agents are selected from the group consisting of antibiotics, anntivirals, anti-inflammatory agents, pain killers, haemostatic agents, phages, growth factors, anti-scarring agents, odour-absorbing agents, and agents that promote angiogenesis.

30. A method of forming a protein polymer, which method comprises reacting a protein with a dicarboxylic acid or an activated derivative thereof, provided that the protein is not bovine serum albumin.

31. A method of forming a protein polymer, which method comprises reacting a protein with an alkylene dicarboxylic acid or an activated derivative thereof.

32. A method as claimed in Claim 30 or Claim 31, wherein the protein is an albumin.

33. A method as claimed in Claim 32, wherein the protein is human serum albumin.

34. A method as claimed in any one of Claims 30 to 33, wherein the dicarboxylic acid has the formula

$$HOOC(CH_2)_nCOOH$$

in which n is from 1 to 20, preferably from 2 to 12, and more preferably from 3 to 8.

35. A method as claimed in any one of Claims 30 to 34, wherein the dicarboxylic acid is activated with a carbodiimide activating agent.

36. A method as claimed in Claim 35, wherein the activating agent is ethyl[dimethyleminopropyl]-carbodiimide.

37. A protein polymer formed by reacting a protein with a dicarboxylic acid or an activated derivative thereof, provided that the protein is not bovine serum albumin.

38. A protein polymer formed by reacting a protein with an alkylene dicarboxylic acid or an activated derivative thereof.

39. A protein polymer as claimed in Claim 37 or Claim 38, which is in the form of a solution.

40. A protein polymer as claimed in Claim 37 or Claim 38, which is in the form of insoluble particles.

41. A protein polymer as claimed in Claim 37 or Claim 38, which is in the form of a gel.

42. A use of a protein polymer as claimed in any one of Claims 37 to 41 in the delivery of one or more therapeutically active components to the body.

43. A use of a protein polymer as claimed in Claim 41 in the topical treatment of a wound, burn or ulcer.

44. A use as claimed in Claim 43, wherein the protein polymer is applied to the wound, burn or ulcer as a preformed gel.

45. The use as claimed in Claim 43, wherein a protein and a dicarboxylic acid spacer are applied in solution to the wound, burn or ulcer, and the protein polymer is formed *in situ*.

46. The use of a protein polymer as claimed in Claim 37 or Claim 38 as a coating for a device to be implanted in the body.

47. The use of a protein polymer as claimed in Claim 39 as a platelet substitute or platelet enhancer.

48. A protein polymer as claimed in Claim 39, wherein the protein polymer is conjugated with one or more clotting agents or active peptide derivatives.

49. A protein polymer as claimed in Claim 48, wherein the protein polymer is conjugated with fibrinogen.

50. A protein polymer as claimed in Claim 39, which polymer is conjugated to a therapeutically active agent, or a precursor thereof, and to a targeting moiety having an affinity with a specific locus within the body.

51. The use of a conjugate as claimed in Claim 50 in targeted anti-cancer therapies.

52. A protein polymer as claimed in Claim 39, which polymer is conjugated to a contrast agent and to a targeting moiety having an affinity with a specific locus within the body.

53. The use of a conjugate as claimed in Claim 39 in medical imaging applications.

54. A kit for the preparation of a wound dressing according to Claim 21 or Claim 22, which kit comprises a first composition and a second composition, the first composition and the second composition being held in separate containers such that reaction between the first composition and the second composition is prevented.

55. A kit as claimed in Claim 54, wherein the first composition comprises the protein and the polyfunctional spacer, and the second composition comprises an activator for the polyfunctional spacer.

56. A kit as claimed in Claim 55, wherein the first composition is a solution and the second composition is a powder.

57. A method of treatment of the human or animal body, which method comprises the administration to the body of a protein polymer as claimed in any one of Claims 37 to 41.

58. A method as claimed in Claim 57, wherein the protein polymer is administered intravenously.

59. A method as claimed in Claim 57, wherein the protein polymer is administered topically.

60. A method as claimed in any one of Claims 57 to 59, wherein the protein polymer is administered in the form of a solution.

61. A method as claimed in Claim 59, wherein the protein polymer is administered in the form of a powder.

62. A method as claimed in Claim 59, wherein the protein polymer is administered in the form of a gel.

63. A method as claimed in Claim 59, wherein the protein and the dicarboxylic acid cross-linking agent are administered to the body, such that the protein polymer is formed *in situ.*